

### CENTRO DE TECNOLOGÍA DE LAS COMUNICACIONES, S.A.

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# ASSESSMENT REPORT

Report No.: 27470IDT.006

REPORT ON:

RF EXPOSURE ASSESSMENT OF THE F3507g ERICSSON MOBILE BROADBAND MODULE INSTALLED IN THE DELL LATITUDE D630 XFR LAPTOP COMPUTER

Product

: Ericsson Mobile Broadband Module

Trade Mark

: Ericsson

Model

: F3507g

FCC ID:

: VV7-MBMF3507G-D

Manufacturer

: Ericsson AB

Requested by

: Ericsson AB

**Host Platform** 

: DELL LATITUDE D630 XFR

Standard(s)

OET Bulletin 65 Edition 97-01 August 1997

FCC 47 CFR § 1.1307 FCC 47 CFR § 1.1310

1999/519/EC

Radiocommunications (Electromagnetic Radiation -

Human Exposure) Standard 2003

ARPANSA RPS No. 3

Vodafone requirements [1999/519/EC]

This test report includes 2 annexes and therefore, the total number of pages is 26.

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#### 1. COMPETENCE AND GUARANTEES

AT4 wireless is a testing laboratory competent to carry out the evaluation described in this report.

AT4 wireless guarantees the reliability of the data presented in this report, which is based on the information available at AT4 wireless at the time of performance of the evaluation.

AT4 wireless is liable to the client for the maintenance of the confidentiality of all information related to the item under review and the results of such evaluation

#### 2. GENERAL CONDITIONS

- 1. This report refers only to the item that has undergone the evaluation as described in Annex A of this report according to the information provided by the applicant.
- 2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
- 3. This document is only valid if complete; no partial reproduction can be made without previous written permission of AT4 wireless.
- 4. This report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of AT4 wireless and the Accreditation Bodies.

#### 3. CHARACTERISTICS OF THE EVALUATION

#### 3.1. SERVICES REQUESTED

RF exposure assessment of the F3507g Ericsson Mobile Broadband Module installed in the DELL LATITUDE D630 XFR laptop computer according to:

Requirements	Frequency bands
OET Bulletin 65 Edition 97-01 August 1997 - Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields FCC 47 CFR § 1.1307 - Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared. FCC 47 CFR § 1.1310 - Radiofrequency radiation exposure limits.	GSM 850, FDD V, PCS 1900, FDD II
1999/519/EC Council Recommendation on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)	E-GSM 900, DCS 1800, FDD I

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Radiocommunications (Electromagnetic Radiation – Human Exposure) Standard 2003  ARPANSA RPS No. 3 – Maximum Exposure Levels to Radiofrequency Fields (3 kHz to 300 GHz)	FDD V, E-GSM 900, DCS 1800, FDD I
Vodafone requirements [1999/519/EC]	GSM 850, FDD V, E-GSM 900, DCS 1800, PCS 1900, FDD II, FDD I

### 3.2. REQUIREMENTS AND METHOD

The evaluation has been carried out according to the following documents and standards:

Requirements	Frequency bands
OET Bulletin 65 Edition 97-01 August 1997 - Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields	
FCC 47 CFR § 1.1307 - Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared.	GSM 850, FDD V, PCS 1900, FDD II
FCC 47 CFR § 1.1310 - Radiofrequency radiation exposure limits.	
1999/519/EC Council Recommendation on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)	E-GSM 900, DCS 1800, FDD I
Radiocommunications (Electromagnetic Radiation – Human Exposure) Standard 2003	
ARPANSA RPS No. 3 – Maximum Exposure Levels to Radiofrequency Fields (3 kHz to 300 GHz)	FDD V, E-GSM 900, DCS 1800, FDD I
Vodafone requirements [1999/519/EC]	GSM 850, FDD V, E-GSM 900, DCS 1800, PCS 1900, FDD II, FDD I

### 4. IDENTIFICATION DATA SUPPLIED BY THE APPLICANT

Identification data included in this section has been supplied by the client.

### 4.1. APPLICANT

Name / Company: Ericsson AB

V.A.T. Registration number: 556056-625801

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Address: Lindholmspiren 11, SE-417 56 Goteborg

Country: Sweden

**Telephone:** +46 31 747 0000 **Fax:** +46 31 747 6033

#### 4.2. REPRESENTATIVE

Name: Pelle Hellberg

Address: Lindholmspiren 11, SE-417 56 Goteborg

**Country:** Sweden

#### 4.3. IDENTIFICATION OF ITEM/ITEMS EVALUATED

**Product:** Ericsson Mobile Broadband Module

Trade mark: Ericsson Model: F3507g FCC ID: VV7-MBMF3507G-D

Manufacturer: Ericsson AB

Country of manufacture: China

Host platform: DELL LATITUDE D630 XFR

Description: 850/900/1800/1900/2100 MHz GSM/GPRS Class10/EDGE/HSDPA/HSUPA/WCDMA

Release 6 Module installed in a DELL LATITUDE D630 XFR Laptop.

#### 5. EVALUATION RESULTS

Abbreviations used in the VERDICT column of the following tables are:

**C** Compliant with requirements

**NC** Not Compliant with requirements

NA Not Applicable

**NE** Not Evaluated

### 5.1. RESULTS FOR ITEM EVALUATED TRANSMITTING ALONE

DOCUMENT/STANDARD -		VERDICT		
		C	NC	NE
OET Bulletin 65 Edition 97-01 August 1997 - Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic				
Fields		C		
FCC 47 CFR § 1.1307 - Actions that may have a significant environmental		C		
effect, for which Environmental Assessments (EAs) must be prepared.				
FCC 47 CFR § 1.1310 - Radiofrequency radiation exposure limits.				

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1999/519/EC Council Recommendation on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)	С
Radiocommunications (Electromagnetic Radiation – Human Exposure) Standard 2003 ARPANSA RPS No. 3 – Maximum Exposure Levels to Radiofrequency Fields (3 kHz to 300 GHz)	С
Vodafone requirements [1999/519/EC]	С

# 5.2. RESULTS FOR ITEM EVALUATED TRANSMITTING SIMULTANEOUSLY WITH OTHER CO-LOCATED TRANSMITTERS

DOCUMENT/STANDARD		VERDICT		
DOCUMEN I/STANDARD	NA	C	NC	NE
OET Bulletin 65 Edition 97-01 August 1997 - Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields		C		
FCC 47 CFR § 1.1307 - Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared.		C		
FCC 47 CFR § 1.1310 - Radiofrequency radiation exposure limits.				
1999/519/EC Council Recommendation on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)		C		
Radiocommunications (Electromagnetic Radiation – Human Exposure) Standard 2003 ARPANSA RPS No. 3 – Maximum Exposure Levels to Radiofrequency Fields (3 kHz to 300 GHz)		C		
Vodafone requirements [1999/519/EC]		С		

#### 6. REMARKS AND COMMENTS

GSM and GPRS modes have been evaluated together because both modes share the same power class and modulation scheme in the uplink.

WCDMA and HSDPA modes have been evaluated together because HSDPA is an improved mode of operation only for Downlink (equipment reception), but using the normal WCDMA mode for the Uplink (equipment transmission).

#### 7. SUMMARY

Considering the results of the performed analysis and evaluation, stated in annexes A and B, the item under evaluation is **IN COMPLIANCE** with the specifications listed in section 3.1 " SERVICES REQUESTED".

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NOTE: The results presented in this report apply only to the particular item under evaluation established in section "4.3. IDENTIFICATION OF ITEM/ITEMS EVALUATED" of this document, as presented for evaluation by the applicant.

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## ANNEX A

# **HOST PLATFORM ANALYSIS**

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#### A.1. INTRODUCTION

DELL LATITUDE D630 XFR is a 14.1" widescreen laptop computer which can be fitted with the following transmitters:

#### **MAIN/PRIMARY TRANSMITTER:**

#### **WWAN** transmitter:

Type of equipment : Ericsson Mobile Broadband Module

Trade mark : Ericsson Model : F3507g

FCC ID : VV7-MBMF3507G-D

#### ADDITIONAL/SECONDARY TRANSMITTERS:

#### Bluetooth/UWB transmitter:

Type of equipment : Bluetooth 2.0 + EDR

Trade mark : Dell

Model : Wireless 360 FCC ID : PIWW360BT

#### **WLAN transmitters:**

Type of equipment : 802.11bg WLAN transmitter

Trade mark : Dell

Model : Wireless 1395 FCC ID : QDS-BRCM1028

Type of equipment : 802.11abg WLAN transmitter

Trade mark : Dell

Model : Wireless 1490 FCC ID : QDS-BRCM1019

Type of equipment : 802.11abgn WLAN transmitter

Trade mark : Dell

Model : Wireless 1505 FCC ID : QDS-BRCM1022

Type of equipment : 802.11abg WLAN transmitter

Trade mark : Intel

Model : PRO 3945ABG FCC ID : E2KWM3945ABG

Type of equipment : 802.11abgn WLAN transmitter

Trade mark : Intel

Model : WiFi Link 4965AGN FCC ID : E2K4965AGNM

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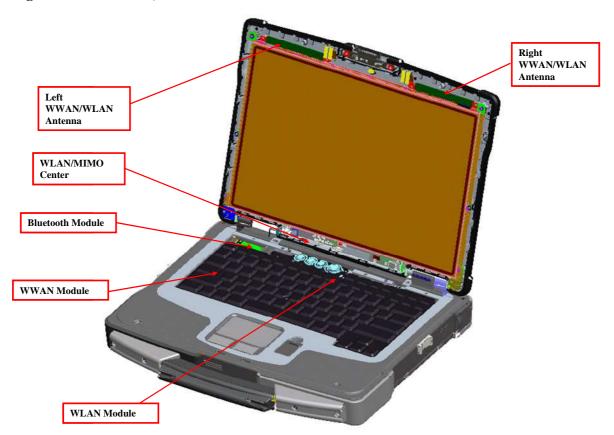
NOTE: - Only one of the listed above WLAN transmitters can be installed in the DELL LATITUDE D630 XFR laptop computer at one time.

#### **A.2. ANTENNAS INFORMATION**

#### Antennas locations and distances:

Antenna	Antenna location	Maximum antenna gain (dBi)	Antenna to user distance (mm)	Antenna to WWAN Tx antenna distance (mm)
WWAN MAIN	Top right corner of the display	1,6	> 200	-
WLAN MAIN	Top right corner of the display	3	> 200	< 200
WLAN AUX	Top left corner of the display	3	> 200	< 200
WLAN MIMO	Bottom middle of the display	3	< 200	> 200
Bluetooth antenna	In laptop base	3	< 20	> 200

#### Diagram of the WWAN, WLAN and Bluetooth transmitters' antennas locations:



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#### **CONCLUSIONS:**

- WLAN transmitter is in co-location condition in relation to the WWAN transmitter, Ericsson F3507g, (WWAN antenna to WLAN antennas distance < 20 cm) except for the WLAN MIMO antenna. WLAN contribution has to be considered when evaluating the exposure to electromagnetic fields due to the F3507g Ericsson Mobile Broadband Module installed in the DELL LATITUDE D630 XFR laptop computer.</p>
- Bluetooth transmitter is NOT in co-location condition in relation to the WWAN transmitter, Ericsson F3507g, (WWAN antenna to Bluetooth antenna distance > 20 cm). Bluetooth contribution does NOT need to be considered when evaluating the exposure to electromagnetic fields due to the F3507g Ericsson Mobile Broadband Module installed in the DELL LATITUDE D630 XFR laptop computer.
- WWAN transmitter, Ericsson F3507g, WLAN transmitters and Bluetooth transmitters are in mobile exposure conditions (antenna to user distance > 20 cm), except WLAN MIMO antenna which is in portable exposure conditions but it is not co-located with WWAN transmitter.

**NOTE:** For this report a worst case evaluation distance of 20 cm has been considered to calculate the exposure to electromagnetic fields.

#### A.3. TRANSMITTERS SPECIFICATIONS

#### **MAIN/PRIMARY TRANSMITTER:**

#### **WWAN transmitter:**

Type of equipment : Ericsson Mobile Broadband Module

Trade mark : Ericsson Model : F3507g

FCC ID : VV7-MBMF3507G-D

Output power : See table

Frequency Band	Mode	Frequency range (MHz)	Maximum conducted output power (dBm)	Maximum conducted output power (mW)	Duty Cycle	Equivalent conducted output power (mW)	Maximum antenna gain (dBi)	Maximum antenna gain (numerical)	EIRP (mW)
GSM 850	GSM/GPRS	824,2 - 848,8	33,00	1995,26	25%	498,82	1,60	1,45	721,01
GSW 650	EDGE	824,2 - 848,8	31,00	1258,93	25%	314,73	1,60	1,45	454,93
FDD V	WCDMA/HSDPA	826,4 - 846,6	23,62	230,14	100%	230,14	1,60	1,45	332,66
TDD V	HSUPA	826,4 - 846,6	23,08	203,24	100%	203,24	1,60	1,45	293,76
E-GSM 900	GSM/GPRS	880,2 - 914,8	33,99	2506,11	25%	626,53	1,60	1,45	905,61
E-G5W1 900	EDGE	880,2 - 914,8	27,00	501,19	25%	125,30	1,60	1,45	181,11
DCS 1800	GSM/GPRS	1710,2 - 1784,8	32,54	1794,73	25%	448,68	1,60	1,45	648,54
DC3 1800	EDGE	1710,2 - 1784,8	26,10	407,38	25%	101,85	1,60	1,45	147,21
PCS 1900	GSM/GPRS	1850,2 - 1909,8	29,30	851,14	25%	212,78	1,60	1,45	307,57
FC3 1900	EDGE	1850,2 - 1909,8	28,70	741,31	25%	185,33	1,60	1,45	267,88
FDD II	WCDMA/HSDPA	1852,4 - 1907,6	23,00	199,53	100%	199,53	1,60	1,45	288,40
TDD II	HSUPA	1852,4 - 1907,6	22,80	190,55	100%	190,55	1,60	1,45	275,42
FDD I	WCDMA/HSDPA	1922,4 - 1977,6	22,40	173,78	100%	173,78	1,60	1,45	251,19
ו עליו	HSUPA	1922,4 - 1977,6	22,10	162,18	100%	162,18	1,60	1,45	234,42

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#### ADDITIONAL/SECONDARY TRANSMITTERS:

#### **WLAN** transmitters:

Type of equipment : 802.11bg WLAN transmitter

Trade mark : Dell

Model : Wireless 1395 FCC ID : QDS-BRCM1028

Output power : See table

Model name	FCC ID	Frequency range (MHz)	Maximum conducted output power (dBm)	Maximum conducted output power (mW)	Duty Cycle	Equivalent conducted output power (mW)	Maximum antenna gain (dBi)	Maximum antenna gain (numerical)	EIRP (mW)
Dell Wireless 1395	QDS-BRCM1028	2400 - 2483,5	22,53	179,00	100%	179,00	3,00	2,00	357,15

Type of equipment : 802.11abg WLAN transmitter

Trade mark : Dell

Model : Wireless 1490 FCC ID : QDS-BRCM1019

Output power : See table

Model name	FCC ID	Frequency range (MHz)	Maximum conducted output power (dBm)	Maximum conducted output power (mW)	Duty Cycle	Equivalent conducted output power (mW)	Maximum antenna gain (dBi)	Maximum antenna gain (numerical)	EIRP (mW)
	QDS-BRCM1019	2400,0 - 2483,5	26,36	432,5	100%	432,50	3,00	2,00	862,95
Dell Wireless 1490		5150,0 - 5350,0	16,51	44,8	100%	44,80	3,00	2,00	89,39
		5725,0 - 5850,0	23,67	232,8	100%	232,80	3,00	2,00	464,50

Type of equipment : 802.11abgn WLAN transmitter

Trade mark : Dell

Model : Wireless 1505 FCC ID : QDS-BRCM1022

Output power : See table

Model name	FCC ID	Frequency range (MHz)	Maximum conducted output power (dBm)	Maximum conducted output power (mW)	Duty Cycle	Equivalent conducted output power (mW)	Maximum antenna gain (dBi)	Maximum antenna gain (numerical)	EIRP (mW)
Dell Wireless 1505	QDS-BRCM1022	2400,0 - 2483,5	26,89	489,00	100%	489,00	3,00	2,00	975,68
		5150,0 - 5350,0	20,29	107,00	100%	107,00	3,00	2,00	213,49
		5725,0 - 5850,0	26,09	406,00	100%	406,00	3,00	2,00	810,08

Type of equipment : 802.11abg WLAN transmitter

Trade mark : Intel

Model : PRO 3945ABG FCC ID : E2KWM3945ABG

Output power : See table

Model name	FCC ID	Frequency range (MHz)	Maximum conducted output power (dBm)	Maximum conducted output power (mW)	Duty Cycle	Equivalent conducted output power (mW)	Maximum antenna gain (dBi)	Maximum antenna gain (numerical)	(mW)
	E2KWM3945ABG	2400,0 - 2483,5	24,77	300,00	100%	300,00	3,00	2,00	598,58
Intel PRO 3945ABG		5150,0 - 5350,0	18,39	69,00	100%	69,00	3,00	2,00	137,67
		5725,0 - 5850,0	19,73	94,00	100%	94,00	3,00	2,00	187,55

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Type of equipment : 802.11abgn WLAN transmitter

Trade mark : Intel

Model : WiFi Link 4965AGN FCC ID : E2K4965AGNM

Output power : See table

Model name	FCC ID	Frequency range (MHz)	Maximum conducted output power (dBm)	Maximum conducted output power (mW)	Duty Cycle	Equivalent conducted output power (mW)	Maximum antenna gain (dBi)	Maximum antenna gain (numerical)	EIRP (mW)
Intel WiFi Link 4965AGN		2400,0 - 2483,5	26,63	460,00	100%	460,00	3,00	2,00	917,82
	E2K4965AGNM	5150,0 - 5350,0	20,90	123,00	100%	123,00	3,00	2,00	245,42
		5725,0 - 5850,0	24,81	303,00	100%	303,00	3,00	2,00	604,56

**NOTE:** Only co-located secondary transmitters has been considered according to the conclusions of chapter 2 of Annex A included in page 10 of this report.

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Annex B

## **ANNEX B**

### RF EXPOSURE ASSESSMENT

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#### **B.1. MAXIMUM PERMISSIBLE EXPOSURE (MPE) LIMITS**

#### **B.1.1. FCC LIMITS**

#### **Normative documents:**

- OET Bulletin 65 Edition 97-01 August 1997 Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields
- FCC 47 CFR § 1.1307 Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared.
- FCC 47 CFR § 1.1310 Radiofrequency radiation exposure limits.1999/519/EC Council Recommendation on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)

#### **Reference levels:**

The table below is excerpted from Table 1B of 47 CFR 1.1310 titled Limits for Maximum Permissible Exposure (MPE), Limits for General Population/Uncontrolled Exposure:

Frequency Range (MHz)	Power density $(\frac{W}{m^2})$	Averaging time (minutes)
300 – 1500	<u>f(MHz)</u>	30
	1500	
1500 – 100.000	1.0	30

#### **MPE limits:**

- Main/Primary transmitter (F3507g Ericsson Mobile Broadband Module):

Frequency Band Mode		Frequency Range (MHz)	Reference frequency (MHz)	$MPE \ limit \\ (S_{eq}) \\ (\frac{mW}{cm^2})$
GSM 850	GSM/GPRS	824,2 - 848,8	824,20	0,5495
GSW 650	EDGE	824,2 - 848,8	824,20	0,5495
FDD V	WCDMA/HSDPA	826,4 - 846,6	826,40	0,5509
TDD V	HSUPA	826,4 - 846,6	826,40	0,5509
PCS 1900	GSM/GPRS	1850,2 - 1909,8	1850,20	1,0000
PCS 1900	EDGE	1850,2 - 1909,8	1850,20	1,0000
FDD II	WCDMA/HSDPA	1852,4 - 1907,6	1852,40	1,0000
	HSUPA	1852,4 - 1907,6	1852,40	1,0000

- Additional/Secondary transmitters: All the transmission frequencies for WLAN and Bluetooth modules are above 1.5 GHz, so that the MPE limit is 1 mW/cm<sup>2</sup>.

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#### **B.1.2.** EUROPEAN UNION MPE LIMITS

#### **Normative document:**

- 1999/519/EC Council Recommendation on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)

#### **Reference levels:**

The table below is excerpted from Table 2 of 1999/519/EC, titled "Reference levels for electric, magnetic and electromagnetic fields (0 Hz to 300 GHz, unperturbed rms values)":

Frequency range	E-field strength $(\frac{V}{m})$	H-field strength $(\frac{A}{m})$	B-field (μT)	$\begin{aligned} & Equivalent \\ & plane \ wave \\ & power \\ & density \ S_{eq} \\ & (\frac{W}{m^2}) \end{aligned}$
400 - 2000 MHz	$1,375 \cdot f(\textit{MHz})^{1/2}$	$0.0037 \cdot f(\textit{MHz})^{1/2}$	$0,0046 \cdot f(\mathit{MHz})^{1/2}$	$\frac{f(MHz)}{200}$
2 - 300 GHz	61	0,16	0,2	10

#### **MPE limits:**

- Main/Primary transmitter (F3507g Ericsson Mobile Broadband Module):

Frequency Band	Mode	Frequency Range (MHz)	Reference frequency (MHz)	$\begin{aligned} & \text{MPE limit} \\ & (S_{eq}) \\ & (\frac{mW}{cm^2}) \end{aligned}$
E-GSM 900	GSM/GPRS	880,2 - 914,8	880,20	0,4401
E-GSM 900	EDGE	880,2 - 914,8	880,20	0,4401
DCS 1800	GSM/GPRS	1710,2 - 1784,8	1710,20	0,8551
DC3 1800	EDGE	1710,2 - 1784,8	1710,20	0,8551
FDD I	WCDMA/HSDPA	1922,4 - 1977,6	1922,40	0,9612
	HSUPA	1922,4 - 1977,6	1922,40	0,9612

- Additional/Secondary transmitters: All the transmission frequencies for WLAN and Bluetooth modules are above 2 GHz, so that the MPE limit is 1 mW/cm<sup>2</sup>.

#### **B.1.3. AUSTRALIA MPE LIMITS**

#### **Normative documents:**

- Radiocommunications (Electromagnetic Radiation Human Exposure) Standard 2003
- ARPANSA RPS No. 3 Maximum Exposure Levels to Radiofrequency Fields (3 kHz to 300 GHz)

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#### **Reference levels:**

The table below is excerpted from Table 7 of ARPANSA RPS No. 3, titled "Reference levels for time averaged exposure to RMS electric and magnetic fields (unperturbed rms values)":

Exposure category	Frequency range	E-field strength $(\frac{V}{m} \text{ rms})$	H-field strength $(\frac{A}{m} \text{ rms})$	$Equivalent \\ plane wave \\ power density \\ S_{eq} \\ (\frac{W}{m^2})$	$Equivalent \\ plane wave \\ power \\ density S_{eq} \\ (\frac{mW}{cm^2})$
General public	400 MHz - 2 GHz	$1,37 \cdot f (MHz)^{1/2}$	$0,00364 \cdot f(MHz)^{1/2}$	$\frac{f(MHz)}{200}$	$\frac{f(MHz)}{2000}$
General public	2 - 300 GHz	61	0,16	10	1

#### **MPE limits:**

- Main/Primary transmitter (F3507g Ericsson Mobile Broadband Module):

Frequency Band Mode		Frequency Range (MHz)	Reference frequency (MHz)	$\begin{aligned} & \text{MPE limit} \\ & (S_{eq}) \\ & (\frac{mW}{cm^2}) \end{aligned}$
FDD V	WCDMA/HSDPA	826,4 - 846,6	826,40	0,4132
TDD V	HSUPA	826,4 - 846,6	826,40	0,4132
E-GSM 900	GSM/GPRS	880,2 - 914,8	880,20	0,4401
E-GSM 900	EDGE	880,2 - 914,8	880,20	0,4401
DCS 1800	GSM/GPRS	1710,2 - 1784,8	1710,20	0,8551
DCS 1800	EDGE	1710,2 - 1784,8	1710,20	0,8551
FDD I	WCDMA/HSDPA	1922,4 - 1977,6	1922,40	0,9612
	HSUPA	1922,4 - 1977,6	1922,40	0,9612

- Additional/Secondary transmitters: All the transmission frequencies for WLAN and Bluetooth modules are above 2 GHz, so that the MPE limit is 1 mW/cm<sup>2</sup>.

#### **B.1.4. VODAFONE MPE LIMITS**

#### **Normative document:**

- 1999/519/EC Council Recommendation on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)

#### **Reference levels:**

The table below is excerpted from Table 2 of 1999/519/EC, titled "Reference levels for electric, magnetic and electromagnetic fields (0 Hz to 300 GHz, unperturbed rms values)":

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Exposure category	Frequency range	E-field strength $(\frac{V}{m} \text{ rms})$	H-field strength $(\frac{A}{m} \text{ rms})$	$Equivalent \\ plane wave \\ power density \\ S_{eq} \\ (\frac{W}{m^2})$	$Equivalent \\ plane wave \\ power \\ density S_{eq} \\ (\frac{mW}{cm^2})$
General public	400 MHz - 2 GHz	$1,37 \cdot f(MHz)^{1/2}$	$0,00364 \cdot f(MHz)^{1/2}$	$\frac{f(MHz)}{200}$	$\frac{f(MHz)}{2000}$
General public	2 - 300 GHz	61	0,16	10	1

#### **MPE limits:**

- Main/Primary transmitter (F3507g Ericsson Mobile Broadband Module):

Frequency Band	Mode	Frequency Range (MHz)	Reference frequency (MHz)	$MPE \ limit \\ (S_{Lim}) \\ (\frac{mW}{cm^2})$
GSM 850	GSM/GPRS	824,2 - 848,8	824,20	0,4121
GSW 650	EDGE	824,2 - 848,8	824,20	0,4121
FDD V	WCDMA/HSDPA	826,4 - 846,6	826,40	0,4132
TDD V	HSUPA	826,4 - 846,6	826,40	0,4132
E-GSM 900	GSM/GPRS	880,2 - 914,8	880,20	0,4401
E-G5W 900	EDGE	880,2 - 914,8	880,20	0,4401
DCS 1800	GSM/GPRS	1710,2 - 1784,8	1710,20	0,8551
DCS 1800	EDGE	1710,2 - 1784,8	1710,20	0,8551
PCS 1900	GSM/GPRS	1850,2 - 1909,8	1850,20	0,9251
1 C3 1900	EDGE	1850,2 - 1909,8	1850,20	0,9251
FDD II	WCDMA/HSDPA	1852,4 - 1907,6	1852,40	0,9262
I DD II	HSUPA	1852,4 - 1907,6	1852,40	0,9262
FDD I	WCDMA/HSDPA	1922,4 - 1977,6	1922,40	0,9612
17001	HSUPA	1922,4 - 1977,6	1922,40	0,9612

- Additional/Secondary transmitters: All the transmission frequencies for WLAN and Bluetooth modules are above 2 GHz, so that the MPE limit is 1 mW/cm<sup>2</sup>.

#### **B.2. RF EXPOSURE ASSESSMENT – INDIVIDUAL TRANSMITTERS**

#### **B.2.1. INTRODUCTION**

Calculations to predict power density levels in the far-field of the antenna are made by use of the following equation:

$$S = \frac{P \cdot G}{4\pi R^2} = \frac{EIRP}{4\pi R^2}$$

where:  $S = power density (in appropriate units, e.g. <math>mW/cm^2$ )

P = power input to the antenna (in appropriate units, e.g., mW)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

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# B.2.2. RF EXPOSURE ASSESSMENT FOR F3507g ERICSSON MOBILE BROADBAND MODULE INSTALLED IN DELL LATITUDE D630 XFR LAPTOP COMPUTER

### FCC REQUIREMENTS

Frequency Band	Mode	Frequency Range (MHz)	EIRP (mW)	Evaluation distance (R) (cm)	Power Density $(S_{eq})$ $S = \frac{P \cdot G}{4\pi R^2} = \frac{EIRP}{4\pi R^2}$ $\left(\frac{\mathbf{mW}}{\mathbf{cm}^2}\right)$	$MPE \ limit \\ (S_{Lim}) \\ (\frac{mW}{cm^2})$	$\begin{aligned} & COMPLIANCE \\ & (S_{eq} < S_{Lim}) \\ & (\frac{mW}{cm^2}) \end{aligned}$
GSM 850	GSM/GPRS	824,2 - 848,8	721,01	20,00	0,1434	0,5495	COMPLIANT
GSW 650	EDGE	824,2 - 848,8	454,93	20,00	0,0905	0,5495	COMPLIANT
FDD V	WCDMA/HSDPA	826,4 - 846,6	332,66	20,00	0,0662	0,5509	COMPLIANT
י עערו	HSUPA	826,4 - 846,6	293,76	20,00	0,0584	0,5509	COMPLIANT
PCS 1900	GSM/GPRS	1850,2 - 1909,8	307,57	20,00	0,0612	1,0000	COMPLIANT
1 C5 1700	EDGE	1850,2 - 1909,8	267,88	20,00	0,0533	1,0000	COMPLIANT
FDD II	WCDMA/HSDPA	1852,4 - 1907,6	288,40	20,00	0,0574	1,0000	COMPLIANT
LDD II	HSUPA	1852,4 - 1907,6	275,42	20,00	0,0548	1,0000	COMPLIANT

### EUROPEAN UNION REQUIREMENTS

Frequency Band	Mode	Frequency Range (MHz)	EIRP (mW)	Evaluation distance (R) (cm)	Power Density $(S_{eq})$ $S = \frac{P \cdot G}{4\pi R^2} = \frac{EIRP}{4\pi R^2}$ $\left(\frac{\mathbf{mW}}{\mathbf{cm}^2}\right)$	$MPE \ limit \\ (S_{Lim}) \\ (\frac{mW}{cm^2})$	$\begin{aligned} & \textbf{COMPLIANCE} \\ & (S_{eq} < S_{Lim}) \\ & (\frac{mW}{cm^2}) \end{aligned}$
E-GSM 900	GSM/GPRS	880,2 - 914,8	905,61	20,00	0,1802	0,4401	COMPLIANT
L-GSM 900	EDGE	880,2 - 914,8	181,11	20,00	0,0360	0,4401	COMPLIANT
DCS 1800	GSM/GPRS	1710,2 - 1784,8	648,54	20,00	0,1290	0,8551	COMPLIANT
DCS 1800	EDGE	1710,2 - 1784,8	147,21	20,00	0,0293	0,8551	COMPLIANT
FDD I	WCDMA/HSDPA	1922,4 - 1977,6	251,19	20,00	0,0500	0,9612	COMPLIANT
ו עערי	HSUPA	1922,4 - 1977,6	234,42	20,00	0,0466	0,9612	COMPLIANT

### AUSTRALIA REQUIREMENTS

Frequency Band	Mode	Frequency Range (MHz)	EIRP (mW)	Evaluation distance (R) (cm)	Power Density $(S_{eq})$ $S = \frac{P \cdot G}{4\pi R^2} = \frac{EIRP}{4\pi R^2}$ $\left(\frac{\mathbf{mW}}{\mathbf{cm}^2}\right)$	MPE limit (S <sub>Lim</sub> ) (mW/cm²)	$\begin{aligned} & \textbf{COMPLIANCE} \\ & (S_{eq} < S_{Lim}) \\ & (\frac{mW}{cm^2}) \end{aligned}$
FDD V	WCDMA/HSDPA	826,4 - 846,6	332,66	20,00	0,0662	0,4132	COMPLIANT
1 DD V	HSUPA	826,4 - 846,6	293,76	20,00	0,0584	0,4132	COMPLIANT
E-GSM 900	GSM/GPRS	880,2 - 914,8	905,61	20,00	0,1802	0,4401	COMPLIANT
E-03M 900	EDGE	880,2 - 914,8	181,11	20,00	0,0360	0,4401	COMPLIANT
DCS 1800	GSM/GPRS	1710,2 - 1784,8	648,54	20,00	0,1290	0,8551	COMPLIANT
DC3 1000	EDGE	1710,2 - 1784,8	147,21	20,00	0,0293	0,8551	COMPLIANT
FDD I	WCDMA/HSDPA	1922,4 - 1977,6	251,19	20,00	0,0500	0,9612	COMPLIANT
1001	HSUPA	1922,4 - 1977,6	234,42	20,00	0,0466	0,9612	COMPLIANT

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### VODAFONE REQUIREMENTS

Frequency Band	Mode	Frequency Range (MHz)	EIRP (mW)	Evaluation distance (R) (cm)	Power Density $(S_{eq})$ $S = \frac{P \cdot G}{4\pi R^2} = \frac{EIRP}{4\pi R^2}$ $\left(\frac{mW}{cm^2}\right)$	$\begin{aligned} & \text{MPE limit} \\ & (S_{\text{Lim}}) \\ & (\frac{\text{mW}}{\text{cm}^2}) \end{aligned}$	$\begin{aligned} & \textbf{COMPLIANCE} \\ & (S_{eq} < S_{Lim}) \\ & (\frac{mW}{cm^2}) \end{aligned}$
GSM 850	GSM/GPRS	824,2 - 848,8	721,01	20,00	0,1434	0,4121	COMPLIANT
G5111 05 0	EDGE	824,2 - 848,8	454,93	20,00	0,0905	0,4121	COMPLIANT
FDD V	WCDMA/HSDPA	826,4 - 846,6	332,66	20,00	0,0662	0,4132	COMPLIANT
י עערו	HSUPA	826,4 - 846,6	293,76	20,00	0,0584	0,4132	COMPLIANT
E-GSM 900	GSM/GPRS	880,2 - 914,8	905,61	20,00	0,1802	0,4401	COMPLIANT
L-GSWI 900	EDGE	880,2 - 914,8	181,11	20,00	0,0360	0,4401	COMPLIANT
DCS 1800	GSM/GPRS	1710,2 - 1784,8	648,54	20,00	0,1290	0,8551	COMPLIANT
DC3 1800	EDGE	1710,2 - 1784,8	147,21	20,00	0,0293	0,8551	COMPLIANT
PCS 1900	GSM/GPRS	1850,2 - 1909,8	307,57	20,00	0,0612	0,9251	COMPLIANT
PCS 1900	EDGE	1850,2 - 1909,8	267,88	20,00	0,0533	0,9251	COMPLIANT
FDD II	WCDMA/HSDPA	1852,4 - 1907,6	288,40	20,00	0,0574	0,9262	COMPLIANT
וו טטר	HSUPA	1852,4 - 1907,6	275,42	20,00	0,0548	0,9262	COMPLIANT
FDD I	WCDMA/HSDPA	1922,4 - 1977,6	251,19	20,00	0,0500	0,9612	COMPLIANT
ו עעז	HSUPA	1922,4 - 1977,6	234,42	20,00	0,0466	0,9612	COMPLIANT

# B.2.3. RF EXPOSURE ASSESSMENT FOR SECONDARY TRANSMITTERS INSTALLED IN DELL LATITUDE D630 XFR LAPTOP COMPUTER

Model name	FCC ID	Frequency range (MHz)	EIRP (mW)	Evaluation distance (cm)	Power Density $(S_{eq})$ $S = \frac{P \cdot G}{4\pi R^2} = \frac{EIRP}{4\pi R^2}$ $\left(\frac{\mathbf{mW}}{\mathbf{cm}^2}\right)$	$MPE \ limit \\ (S_{Lim}) \\ (\frac{mW}{cm^2})$	$\begin{aligned} & COMPLIANCE \\ & (S_{eq} < S_{Lim}) \end{aligned}$
Dell Wireless 1395	QDS-BRCM1028	2400 - 2483,5	357,15	20,00	0,0711	1,0000	COMPLIANT
		2400,0 - 2483,5	862,95	20,00	0,1717	1,0000	COMPLIANT
Dell Wireless 1490	QDS-BRCM1019	5150,0 - 5350,0	89,39	20,00	0,0178	1,0000	COMPLIANT
		5725,0 - 5850,0	464,50	20,00	0,0924	1,0000	COMPLIANT
	QDS-BRCM1022	2400,0 - 2483,5	975,68	20,00	0,1941	1,0000	COMPLIANT
Dell Wireless 1505		5150,0 - 5350,0	213,49	20,00	0,0425	1,0000	COMPLIANT
		5725,0 - 5850,0	810,08	20,00	0,1612	1,0000	COMPLIANT
		2400,0 - 2483,5	598,58	20,00	0,1191	1,0000	COMPLIANT
Intel PRO 3945ABG	E2KWM3945ABG	5150,0 - 5350,0	137,67	20,00	0,0274	1,0000	COMPLIANT
		5725,0 - 5850,0	187,55	20,00	0,0373	1,0000	COMPLIANT
T . 1377777 T . 1		2400,0 - 2483,5	917,82	20,00	0,1826	1,0000	COMPLIANT
Intel WiFi Link 4965AGN	E2K4965AGNM	5150,0 - 5350,0	245,42	20,00	0,0488	1,0000	COMPLIANT
770371011		5725,0 - 5850,0	604,56	20,00	0,1203	1,0000	COMPLIANT

**NOTE:** Only co-located secondary transmitters has been considered according to the conclusions of chapter 2 of Annex A included in page 10 of this report.

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#### **B.3. RF EXPOSURE ASSESSMENT – CO-LOCATION CONSIDERATIONS**

#### **B.3.1. INTRODUCTION**

In situations where simultaneous exposure to fields of different equipment and frequencies occurs, the possibility that these exposures will be additive in their effects must be considered. Calculations based on this additivity are performed by the sum of relative exposure for each equipment according to the following compliance criteria:

$$\sum_{1}^{N} \frac{S_{eqn}}{S_{Limn}} = \frac{S_{eq1}}{S_{Lim1}} + \frac{S_{eq2}}{S_{Lim2}} + \dots + \frac{S_{eqN}}{S_{LimN}} \le 1$$

where:

 $S_{eq}$  is the power density of the electromagnetic field caused, at a given distance (evaluation distance), by a specific equipment transmitting at a defined frequency.

 $S_{Lim}$  is the MPE limit for the evaluated transmission frequency.

#### **B.3.2. FCC REQUIREMENTS**

### RELATIVE EXPOSURE FOR F3507g ERICSSON BROADBAND MODULE

Frequency Band	Mode	Frequency Range (MHz)	$\mathbf{S}_{ ext{eq}}$	$S_{ m Lim}$	$\frac{\mathbf{S}_{\mathrm{eq}}}{\mathbf{S}_{\mathrm{Lim}}}$
GSM 850	GSM/GPRS	824,2 - 848,8	0,1434	0,5495	0,2611
GSM 830	EDGE	824,2 - 848,8	0,0905	0,5495	0,1647
FDD V	WCDMA/HSDPA	826,4 - 846,6	0,0662	0,5509	0,1201
TDD V	HSUPA	826,4 - 846,6	0,0584	0,5509	0,1061
PCS 1900	GSM/GPRS	1850,2 - 1909,8	0,0612	1,0000	0,0612
PCS 1900	EDGE	1850,2 - 1909,8	0,0533	1,0000	0,0533
EDD II	WCDMA/HSDPA	1852,4 - 1907,6	0,0574	1,0000	0,0574
FDD II	HSUPA	1852,4 - 1907,6	0,0548	1,0000	0,0548

#### RELATIVE EXPOSURE FOR SECONDARY TRANSMITTERS

Model name	FCC ID	Frequency range (MHz)	$S_{ m eq}$	$S_{Lim}$	$\frac{S_{eq}}{S_{Lim}}$
Dell Wireless 1395	QDS-BRCM1028	2400 - 2483,5	0,0711	1,0000	0,0711
		2400,0 - 2483,5	0,1717	1,0000	0,1717
Dell Wireless 1490	QDS-BRCM1019	5150,0 - 5350,0	0,0178	1,0000	0,0178
		5725,0 - 5850,0	0,0924	1,0000	0,0924
		2400,0 - 2483,5	0,1941	1,0000	0,1941
Dell Wireless 1505	QDS-BRCM1022	5150,0 - 5350,0	0,0425	1,0000	0,0425
		5725,0 - 5850,0	0,1612	1,0000	0,1612
		2400,0 - 2483,5	0,1191	1,0000	0,1191
Intel PRO 3945ABG	E2KWM3945ABG	5150,0 - 5350,0	0,0274	1,0000	0,0274
		5725,0 - 5850,0	0,0373	1,0000	0,0373

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Intel WiFi Link 4965AGN		2400,0 - 2483,5	0,1826	1,0000	0,1826
	E2K4965AGNM	5150,0 - 5350,0	0,0488	1,0000	0,0488
190511011		5725,0 - 5850,0	0,1203	1,0000	0,1203

#### SIMULTANEOUS EXPOSURE

Equip	oment	$\frac{\mathbf{S_{eq}}}{\mathbf{S_{Lim}}}$	$\frac{S_{Pri}}{S_{Lim\_Pri}} + \\ \frac{S_{Sec\_WLAN}}{S_{Lim\_Sec\_WLAN}}$	$\frac{S_{Pri}}{S_{Lim\_Pri}} + \\ \frac{S_{Sec\_WLAN}}{S_{Lim\_Sec\_WLAN}} < 1$
Primary transmitter	Ericsson F3507g	0,2611	-	-
Secundary transmitter (WLAN)	Dell Wireless 1395	0,0711	0,3321	COMPLIANT
Secundary transmitter (WLAN)	Dell Wireless 1490	0,1717	0,4327	COMPLIANT
Secundary transmitter (WLAN)	Dell Wireless 1505	0,1941	0,4552	COMPLIANT
Secundary transmitter (WLAN)	Intel PRO 3945ABG	0,1191	0,3801	COMPLIANT
Secundary transmitter (WLAN)	Intel WiFi Link 4965AGN	0,1826	0,4436	COMPLIANT

**NOTE:** Only co-located secondary transmitters has been considered according to the conclusions of chapter 2 of Annex A included in page 10 of this report.

### **B.3.3. EUROPEAN UNION REQUIREMENTS**

### RELATIVE EXPOSURE FOR F3507g ERICSSON BROADBAND MODULE

Frequency Band	Mode	Frequency Range (MHz)	$\mathbf{S}_{ ext{eq}}$	$S_{ m Lim}$	$\frac{\mathbf{S}_{\mathrm{eq}}}{\mathbf{S}_{\mathrm{Lim}}}$
E-GSM 900	GSM/GPRS	880,2 - 914,8	0,1802	0,4401	0,4094
E-GSM 900	EDGE	880,2 - 914,8	0,0360	0,4401	0,0819
DCS 1800	GSM/GPRS	1710,2 - 1784,8	0,1290	0,8551	0,1509
DCS 1800	EDGE	1710,2 - 1784,8	0,0293	0,8551	0,0342
EDD I	WCDMA/HSDPA	1922,4 - 1977,6	0,0500	0,9612	0,0520
FDD I	HSUPA	1922,4 - 1977,6	0,0466	0,9612	0,0485

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#### RELATIVE EXPOSURE FOR SECONDARY TRANSMITTERS

Model name	FCC ID	Frequency range (MHz)	$S_{eq}$	$S_{Lim}$	$\frac{\mathbf{S}_{\mathrm{eq}}}{\mathbf{S}_{\mathrm{Lim}}}$
Dell Wireless 1395	QDS-BRCM1028	2400 - 2483,5	0,0711	1,0000	0,0711
		2400,0 - 2483,5	0,1717	1,0000	0,1717
Dell Wireless 1490	QDS-BRCM1019	5150,0 - 5350,0	0,0178	1,0000	0,0178
		5725,0 - 5850,0	0,0924	1,0000	0,0924
		2400,0 - 2483,5	0,1941	1,0000	0,1941
Dell Wireless 1505	QDS-BRCM1022	5150,0 - 5350,0	0,0425	1,0000	0,0425
		5725,0 - 5850,0	0,1612	1,0000	0,1612
		2400,0 - 2483,5	0,1191	1,0000	0,1191
Intel PRO 3945ABG	E2KWM3945ABG	5150,0 - 5350,0	0,0274	1,0000	0,0274
		5725,0 - 5850,0	0,0373	1,0000	0,0373
T / 1337'T' T ' 1		2400,0 - 2483,5	0,1826	1,0000	0,1826
Intel WiFi Link 4965AGN	E2K4965AGNM	5150,0 - 5350,0	0,0488	1,0000	0,0488
1703/1011		5725,0 - 5850,0	0,1203	1,0000	0,1203

#### SIMULTANEOUS EXPOSURE

Equipment		$\frac{\mathbf{S_{eq}}}{\mathbf{S_{Lim}}}$	$\frac{S_{Pri}}{S_{Lim\_Pri}} + \\ \frac{S_{Sec\_WLAN}}{S_{Lim\_Sec\_WLAN}}$	$\frac{S_{Pri}}{S_{Lim\_Pri}} + \\ \frac{S_{Sec\_WLAN}}{S_{Lim\_Sec\_WLAN}} < 1$
Primary transmitter	Ericsson F3507g	0,4094	-	-
Secundary transmitter (WLAN)	Dell Wireless 1395	0,0711	0,4804	COMPLIANT
Secundary transmitter (WLAN)	Dell Wireless 1490	0,1717	0,5811	COMPLIANT
Secundary transmitter (WLAN)	Dell Wireless 1505	0,1941	0,6035	COMPLIANT
Secundary transmitter (WLAN)	Intel PRO 3945ABG	0,1191	0,5285	COMPLIANT
Secundary transmitter (WLAN)	Intel WiFi Link 4965AGN	0,1826	0,5920	COMPLIANT

**NOTE:** Only co-located secondary transmitters has been considered according to the conclusions of chapter 2 of Annex A included in page 10 of this report.

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### **B.3.4. AUSTRALIA REQUIREMENTS**

### RELATIVE EXPOSURE FOR F350g ERICSSON BROADBAND MODULE

Manufacturer	Model name	Frequency range (MHz)	$S_{ m eq}$	$S_{ m Lim}$	$\frac{S_{eq}}{S_{Lim}}$
FDD V	WCDMA/HSDPA	826,4 - 846,6	0,0662	0,4132	0,1602
TDD V	HSUPA	826,4 - 846,6	0,0584	0,4132	0,1414
E-GSM 900	GSM/GPRS	880,2 - 914,8	0,1802	0,4401	0,4094
E-GSWI 900	EDGE	880,2 - 914,8	0,0360	0,4401	0,0819
DCS 1800	GSM/GPRS	1710,2 - 1784,8	0,1290	0,8551	0,1509
DCS 1600	EDGE	1710,2 - 1784,8	0,0293	0,8551	0,0342
FDD I	WCDMA/HSDPA	1922,4 - 1977,6	0,0500	0,9612	0,0520
ו עטט ו	HSUPA	1922,4 - 1977,6	0,0466	0,9612	0,0485

#### RELATIVE EXPOSURE FOR SECONDARY TRANSMITTERS

Model name	FCC ID	Frequency range (MHz)	$S_{ m eq}$	$S_{Lim}$	$\frac{S_{eq}}{S_{Lim}}$
Dell Wireless 1395	QDS-BRCM1028	2400 - 2483,5	0,0711	1,0000	0,0711
		2400,0 - 2483,5	0,1717	1,0000	0,1717
Dell Wireless 1490	QDS-BRCM1019	5150,0 - 5350,0	0,0178	1,0000	0,0178
		5725,0 - 5850,0	0,0924	1,0000	0,0924
		2400,0 - 2483,5	0,1941	1,0000	0,1941
Dell Wireless 1505	QDS-BRCM1022	5150,0 - 5350,0	0,0425	1,0000	0,0425
		5725,0 - 5850,0	0,1612	1,0000	0,1612
		2400,0 - 2483,5	0,1191	1,0000	0,1191
Intel PRO 3945ABG	E2KWM3945ABG	5150,0 - 5350,0	0,0274	1,0000	0,0274
		5725,0 - 5850,0	0,0373	1,0000	0,0373
T . 1 XX / TO Y Y 1		2400,0 - 2483,5	0,1826	1,0000	0,1826
Intel WiFi Link 4965AGN	E2K4965AGNM	5150,0 - 5350,0	0,0488	1,0000	0,0488
1705/1011		5725,0 - 5850,0	0,1203	1,0000	0,1203

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#### SIMULTANEOUS EXPOSURE

Equipment		$\frac{\mathbf{S_{eq}}}{\mathbf{S_{Lim}}}$	$\frac{S_{Pri}}{S_{Lim\_Pri}} + \\ \frac{S_{Sec\_WLAN}}{S_{Lim\_Sec\_WLAN}}$	$\frac{S_{Pri}}{S_{Lim\_Pri}} + \\ \frac{S_{Sec\_WLAN}}{S_{Lim\_Sec\_WLAN}} < 1$
Primary transmitter	Ericsson F3507g	0,4094	-	-
Secundary transmitter (WLAN)	Dell Wireless 1395	0,0711	0,4804	COMPLIANT
Secundary transmitter (WLAN)	Dell Wireless 1490	0,1717	0,5811	COMPLIANT
Secundary transmitter (WLAN)	Dell Wireless 1505	0,1941	0,6035	COMPLIANT
Secundary transmitter (WLAN)	Intel PRO 3945ABG	0,1191	0,5285	COMPLIANT
Secundary transmitter (WLAN)	Intel WiFi Link 4965AGN	0,1826	0,5920	COMPLIANT

**NOTE:** Only co-located secondary transmitters has been considered according to the conclusions of chapter 2 of Annex A included in page 10 of this report.

### **B.3.5. VODAFONE REQUIREMENTS**

### RELATIVE EXPOSURE FOR F350g ERICSSON BROADBAND MODULE

Manufacturer	Model name	Frequency range (MHz)	$\mathbf{S}_{ ext{eq}}$	$S_{ m Lim}$	$\frac{S_{eq}}{S_{Lim}}$
GSM 850	GSM/GPRS	824,2 - 848,8	0,1434	0,4121	0,3481
	EDGE	824,2 - 848,8	0,0905	0,4121	0,2196
FDD V	WCDMA/HSDPA	826,4 - 846,6	0,0662	0,4132	0,1602
	HSUPA	826,4 - 846,6	0,0584	0,4132	0,1414
E-GSM 900	GSM/GPRS	880,2 - 914,8	0,1802	0,4401	0,4094
	EDGE	880,2 - 914,8	0,0360	0,4401	0,0819
DCS 1800	GSM/GPRS	1710,2 - 1784,8	0,1290	0,8551	0,1509
	EDGE	1710,2 - 1784,8	0,0293	0,8551	0,0342
PCS 1900	GSM/GPRS	1850,2 - 1909,8	0,0612	0,9251	0,0661
	EDGE	1850,2 - 1909,8	0,0533	0,9251	0,0576
FDD II	WCDMA/HSDPA	1852,4 - 1907,6	0,0574	0,9262	0,0619
	HSUPA	1852,4 - 1907,6	0,0548	0,9262	0,0592
FDD I	WCDMA/HSDPA	1922,4 - 1977,6	0,0500	0,9612	0,0520
	HSUPA	1922,4 - 1977,6	0,0466	0,9612	0,0485

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### RELATIVE EXPOSURE FOR SECONDARY TRANSMITTERS

Model name	FCC ID	Frequency range (MHz)	$S_{eq}$	$S_{Lim}$	$\frac{S_{eq}}{S_{Lim}}$
Dell Wireless 1395	QDS-BRCM1028	2400 - 2483,5	0,0711	1,0000	0,0711
Dell Wireless 1490	QDS-BRCM1019	2400,0 - 2483,5	0,1717	1,0000	0,1717
		5150,0 - 5350,0	0,0178	1,0000	0,0178
		5725,0 - 5850,0	0,0924	1,0000	0,0924
Dell Wireless 1505	QDS-BRCM1022	2400,0 - 2483,5	0,1941	1,0000	0,1941
		5150,0 - 5350,0	0,0425	1,0000	0,0425
		5725,0 - 5850,0	0,1612	1,0000	0,1612
Intel PRO 3945ABG		2400,0 - 2483,5	0,1191	1,0000	0,1191
	E2KWM3945ABG	945ABG 5150,0 - 5350,0 0,0274	1,0000	0,0274	
		5725,0 - 5850,0	0,0373	1,0000	0,0373
Intel WiFi Link 4965AGN	E2K4965AGNM	2400,0 - 2483,5	0,1826	1,0000	0,1826
		5150,0 - 5350,0	0,0488	1,0000	0,0488
		5725,0 - 5850,0	0,1203	1,0000	0,1203

### SIMULTANEOUS EXPOSURE

Equipment		$\frac{\mathbf{S_{eq}}}{\mathbf{S_{Lim}}}$	$\begin{aligned} & & & & & \\ & & & & & \\ & & & & \\ & & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & \\ & & \\ & \\ & & \\ $	$\frac{S_{Pri}}{S_{Lim\_Pri}} + \\ \frac{S_{Sec\_WLAN}}{S_{Lim\_Sec\_WLAN}} < 1$
Primary transmitter	Ericsson F3507g	0,4094	-	-
Secundary transmitter (WLAN)	Dell Wireless 1395	0,0711	0,4804	COMPLIANT
Secundary transmitter (WLAN)	Dell Wireless 1490	0,1717	0,5811	COMPLIANT
Secundary transmitter (WLAN)	Dell Wireless 1505	0,1941	0,6035	COMPLIANT
Secundary transmitter (WLAN)	Intel PRO 3945ABG	0,1191	0,5285	COMPLIANT
Secundary transmitter (WLAN)	Intel WiFi Link 4965AGN	0,1826	0,5920	COMPLIANT

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